

What is claimed is:

1. A method for multiple award optimization bidding in online auctions comprising:
providing, by the buyer, a price ceiling and a tolerance for a resource;
soliciting a plurality of bids from a plurality of suppliers, the bids having a unit price and
a quantity;
validating the bids if the bids meet a set of rules;
generating an optimal solution with the validated bids, the optimal solution having an
optimal quantity and an optimal unit price from at least one supplier;
comparing the optimal unit price to a compare value; and
replacing the compare value with the optimal unit price if the optimal unit price is less
than the compare value.
2. The method of claim 1 further comprising:
rejecting the bids if the bids do not meet the set of rules; and
denying the bids if at least one of an optimal solution cannot be generated and the optimal
unit price is not less than the compare value.
3. The method of claim 1 wherein the validating comprises:
calculating a total cost of each bid;
comparing the unit price for each bid against the price ceiling;
checking the quantity of each bid against a quantity of a previous bid and the total cost of
each bid against a previous total cost;
evaluating the quantity of each bid against a quantity of another supplier's bid and the
unit price of each bid against a unit price of another supplier's bid; and
rejecting the bid if the bid does not meet the set of rules, the set of rules including the unit
price of the bid not being less than the price ceiling, the quantity of the bid not being less than
the quantity of a previous bid and the total cost of the bid not being greater than the previous
total cost, and the quantity of the bid not being equal to the quantity of at least one other
supplier's bid and the unit price of the bid not being equal to the unit price of at least one other
supplier's bid.
4. The method of claim 1 wherein the generating comprises:
using non-linear programming to determine a decision variable for each bid;

including each bid having the decision variable that matches an optimal parameter in the optimal solution; and

calculating the optimal unit price and the optimal quantity from the included bids.

5. The method of claim 1 wherein the generating comprises:
minimizing the optimal unit price; and
maximizing the optimal quantity.
6. The method of claim 1 wherein the generating comprises:
assigning a decision variable matching the optimal parameter to a bid from a preferred supplier; and
calculating the optimal solution to include the bid from the preferred supplier.
7. The method of claim 1 wherein the generating comprises:
calculating the optimal solution based upon at least one of a minimum number and maximum number of suppliers chosen by the buyer.
8. The method of claim 1 further comprising:
notifying the suppliers of the bids in the optimal solution; and
refreshing a display of the bids with each new bid.
9. The method of claim 8 wherein the notifying comprises:
displaying a ranked ordering of submitted bids in accordance with the optimal solution.
10. The method of claim 1 wherein the soliciting comprises:
identifying at least one of goods and services to be purchased.
11. The method of claim 1 further comprising:
notifying the bidders that the bids are not accepted if a total quantity calculated from the quantity from all bids does not meet the tolerance.
12. The method of claim 1 further comprising:
allowing the buyer to change the tolerance if at least one of the bids are not validated and the optimal solution is not generated.
13. The method of claim 1 wherein the soliciting comprises:
providing a range of values for at least one of the quantity and the unit price.
14. The method of claim 1 wherein the generating comprises:
calculating the optimal solution based on at least one of payment terms, cost, percentage, lead time, discounts and other parameters that are quantifiable as numbers.

15. The method of claim 1 wherein the generating comprises:
determining, as the optimal solution, a lowest overall optimal solution set of bids; and
providing the optimal quantity and the optimal unit price, the optimal quantity being a sum of quantities from the solution set of bids and the optimal unit price being an average of the unit prices from the solution set of bids.
16. A method for multiple award optimization bidding in online auctions comprising:
providing, by the buyer, a price ceiling and a tolerance for a resource;
soliciting a plurality of bids from a plurality of suppliers, the bids having a unit price, a quantity, and a total cost;
accepting a most recent bid from a bidder;
calculating a total cost for the most recent bid;
comparing the unit price for the most recent bid against the price ceiling;
checking the quantity of the most recent bid against a quantity of a previous bid from the bidder and the total cost of the most recent bid against a previous total cost of the bidder;
evaluating the quantity of the most recent bid against a quantity of another supplier's bid and the unit price of the most recent bid against a unit price of another supplier's bid;
rejecting the bid if at least one of the unit price of the most recent bid is not less than the price ceiling, the quantity of the most recent bid is less than the quantity of the previous bid from the bidder and the total cost of the most recent bid is greater than the previous total cost of the bidder, and the quantity of the most recent bid is equal to the quantity of current bids from at least one other supplier and the unit price of the most recent bid is equal to the unit price of the current bids from at least one other supplier;
determining a decision variable for the current bids and the most recent bid if the most recent bid is not rejected;
generating an optimal solution from a lowest overall optimal solution set of the most recent bid that satisfies an objective function and constraints and the current bids that satisfies an objective function and constraints, the optimal solution having an optimal quantity, an optimal unit price and an optimal parameter, the optimal quantity being a sum of quantities from an optimal solution set of bids, the optimal unit price being an average of the unit price from the solution set of bids;
denying the most recent bid if an optimal solution cannot be generated;

comparing the optimal unit price to a compare value;
evaluating whether the decision variable of the most recent bid matches the optimal parameter;
replacing the compare value with the optimal unit price if the optimal unit price is not equal to the compare value and the decision variable of the most recent bid matches the optimal parameter;
notifying the suppliers, in real time, that the most recent bid is in the optimal solution if the decision variable matches the optimal parameter; and
accepting the most recent bid if the decision variable does not match the optimal parameter.

17. A method for bidders to determine an optimal bid comprising:
providing, by the buyer, a price ceiling and a tolerance for a resource;
receiving at least one bid from a supplier, the bid having a unit price and a quantity;
inputting a value for one of a new unit price and a new quantity;
generating an optimal bid using the inputted value; and
supplying at least one of a corresponding value necessary to reach the optimal bid and a no feasible solution result.

18. The method of claim 17 wherein the tolerance includes a maximum quantity and a minimum quantity and the supplying comprises:
rejecting the value if at least one of the new unit price is greater than the price ceiling, the new quantity is less than the minimum quantity, and the new quantity is greater than the maximum quantity; and
requesting a different value.

19. The method of claim 17 wherein the generating comprises:
using non-linear programming to determine a decision variable that matches an optimal parameter; and

calculating one of an optimal unit price and an optimal quantity.

20. The method of claim 17 wherein the generating comprises:
minimizing the corresponding value if the inputted value is a new unit price; and
maximizing the corresponding value if the inputted value is a new quantity.

21. A system for multiple award optimization bidding in online auctions comprising:

a database for receiving and storing a price ceiling and a tolerance from a buyer and a plurality of bids from a plurality of suppliers for a resource, the bids having a unit price and a quantity; and

software for validating the bids and generating an optimal solution, the optimal solution having an optimal quantity, an optimal unit price and an optimal parameter.

22. The system of claim 21 wherein the tolerance comprises a maximum quantity and a minimum quantity.
23. The system of claim 21 wherein the software compares the optimal unit price to a compare value, and replaces the compare value with the optimal unit price if the optimal unit price is less than the compare value and the optimal parameter matches a constraint.
24. The system of claim 21 wherein the software calculates a total cost of each bid, compares the unit price for each bid against the price ceiling, checks the quantity of each bid against a quantity of a previous bid and the total cost of each bid against a previous total cost, evaluates the quantity of each bid against a quantity of another supplier's bid and the unit price of each bid against a unit price of another supplier's bid, rejects the bid if the bid does not meet a set of rules that include the unit price of the bid not being less than the price ceiling, the quantity of the bid not being less than the quantity of a previous bid and the total cost of the bid not being greater than the previous total cost, and the quantity of the bid not being equal to the quantity of at least one other supplier's bid and the unit price of the bid not being equal to the unit price of at least one other supplier's bid.
25. The system of claim 21 wherein the software receives a value for one of a new unit price and a new quantity, generates an optimal bid using the value, and supplies at least one of a corresponding value necessary to reach the optimal bid and a no feasible solution result.
26. The system of claim 21 wherein the optimal quantity is a sum of quantities from an optimal solution set of bids, the optimal unit price is an average of the unit price from the solution set of bids, and the optimal parameter is a decision variable.
27. A machine readable medium for multiple award optimization bidding in online auctions comprising:
- a first machine readable code that receives and stores a price ceiling and a tolerance from a buyer and a plurality of bids from a plurality of suppliers for a resource, the bids having a unit price and a quantity;

a second machine readable code that validates the bids; and

a third readable code that generates an optimal solution, the optimal solution having an optimal quantity, an optimal unit price, and an optimal parameter.

28. The machine readable medium of claim 27 wherein the tolerance comprises a minimum quantity and a maximum quantity.

29. The machine readable medium of claim 27 wherein the optimal solution is generated by minimizing the optimal unit price and number of suppliers and maximizing the optimal quantity.

30. The machine readable medium of claim 27 wherein the optimal quantity is a sum of quantities from a combination of bids, the optimal unit price is an average of the unit price from the combination of bids, and the optimal parameter is a decision variable.

31. The machine readable medium of claim 27 wherein the bids are validated by calculating a total cost of each bid, comparing the unit price for each bid against the price ceiling, checking the quantity of each bid against a quantity of a previous bid and the total cost of each bid against a previous total cost, evaluating the quantity of each bid against a quantity of another supplier's bid and the unit price of each bid against a unit price of another supplier's bid and rejecting the bid if the bid does not meet the set of rules, including the unit price of the bid not being less than the price ceiling, the quantity of the bid not being less than the quantity of a previous bid and the total cost of the bid not being greater than the previous total cost, and the quantity of the bid not being equal to the quantity of at least one other supplier's bid and the unit price of the bid not being equal to the unit price of at least one other supplier's bid.

32. The machine readable medium of claim 27 further comprising a fourth readable code that receives a value for one of a new unit price and a new quantity, generates an optimal bid using the value, and supplies at least one of a corresponding value necessary to reach the optimal bid and a no feasible solution result.